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ACTIVITY REVIEW REPORT

OPERATION AND MAINTENANCE OF SANITATION FACILITIES

REGION 4

Toiyabe N.F.	-	July 26-28, 1976
Ashley N.F.	-	August 23-27, 1976
Fishlake N.F.	-	August 30-31, 1976
Dixie N.F.	-	September 1-3, 1976
Sawtooth N.F.	-	September 8-10, 1976

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I. INTRODUCTION

A. Type of Review - Activity review of operation and maintenance of sanitary facilities in Region 4.

B. Units of Geographic Area Reviewed - The review was limited to the following five National Forests: Toiyabe, Ashley, Fishlake, Dixie, and Sawtooth. The Review Team spent time in the Supervisor's Offices as well as with individual Ranger Districts.

C. Review Team - The Review Team members were: Team Leader Ron Hayden, Assistant Director of Engineering; Vern Mitchell, Water and Sanitation Engineer; Dave Crigger, Programs Engineer; Dale O. (Jack) Frost, Assistant Director of Engineering. The principal consultants for the Review Team were: Bill Rozynek, Director of Recreation Plans and Administration; Dave Karling, Recreation Administration Planner; and Don C. Braegger, Regional Contracting Officer.

D. Review Dates

Forest	Date of Review
Toiyabe N.F.	July 26-28, 1976
Ashley N.F.	August 23-27, 1976
Fishlake N.F.	August 30-31, 1976
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E. Elapsed Time Since Last Review of Similar Type - This is the first review of this type in Region 4.

F. Brief Description of How the Review was Conducted - The review was divided into five major parts because five National Forests had to be visited. These Forests were selected because they represent the major areas of sanitation facilities in the Region. It was decided that a cross section of these five Forests would give the team a broad enough base that conclusions and alternatives could be drawn for the entire Region.

The review on each Forest generally could be divided into four categories. The first major part began as the Review Plan and individual itinerary for each Forest was drawn up by the Review Team and circulated to the Forest for approval and comment. This familiarized some of the participants with the objectives and general items of interest. However, to make sure all participants were working with a basic understanding of the goals and objectives, a brief orientation discussion was held with both the Supervisor's Office Staff and District personnel. As the team members and Supervisor's Office Staffs would travel from one Ranger District to another, these brief orientation sessions would be repeated.

The second major part of the review consisted of an on-the-ground review of existing facilities and operation and maintenance procedures and problems.

The third part of the review consisted of a discussion or input session at the Supervisor's Office. In this session, Supervisor's Office staff members, as well as Ranger District personnel, were asked to provide facts and figures demonstrating problem areas and possible solutions.

The fourth part of the review was the summarization of information. The team members then searched for and listed possible alternatives to improve the operation and maintenance of our facilities, as well as methods of financing this activity. At the conclusion of this writing session, a joint meeting with the Supervisor and his Staff was held. In this meeting, the team members went over four items, as follows:

1. Items deserving commendation.
2. Existing conditions observed at facilities.
3. Alternatives for financing and improving operation and maintenance.
4. Minor items that need not be in the Review Report.

A written copy of the findings of the Activity Review Team was left with the Forest.

G. The Principal Participants and Major Locations Visited

1. Toiyabe National Forest - July 26-28:

Regional Office - Team members and consultants participating in the Toiyabe Activity Review were: Jack Frost, Assistant Director of Engineering; Vern Mitchell, Water and Sanitation Engineer; and Dave Karling, Recreation Administration Planner.

Supervisor's Office - Billy J. Reed, Forest Engineer; and Arthur Prince, Civil Engineer.

Field Review - Accompanied by Billy J. Reed, Forest Engineer.

Carson Ranger District - Terry Hopson, District Ranger and Gary Sayer, Forester.

Visited Alpine County Landfill and vault waste dump site, Crystal Springs Campground, Snowshoe Springs Campground, Hope Valley Campground, Markleeville Guard Station, and Markleeville Campground.

Bridgeport Ranger District - Ralph Andy Finn, District Ranger; H. Marion Hysell, Fire Control Officer; and Maurice C. Crawford, Forestry Technician.

Visited Bridgeport Ranger Station, Buckeye Campground and Lagoons, campgrounds in Robinson Creek, Mono Village Special Use Area, Twin Lakes Special Use Area, Mono County Solid Waste Landfill and pumping disposal area, Leavitt Meadow Lodge Special Use Area, Chris Flat Campground, and Bootleg Campground.

2. Ashley National Forest - August 23-27:

Regional Office - Team members and consultants participating in the review on this Forest were as follows: Ron Hayden, Assistant Director of Engineering; Vern Mitchell, Water and Sanitation Engineer; Dave Crigger, Programs Engineer; Bill Rozynek, Recreation Plans and Administration.

Supervisor's Office - Robert A. Rowan, Forest Supervisor; J. Kirby Lee, Forest Engineer; Paul F. Howard, Supervisory Civil Engineer; Lewis H. Curry, Sanitary Engineer; J. Kent Taylor, Recreation and Land Use Forester; and Alan Baird, Landscape Architect.

Manila and Green River Units of Flaming Gorge District - Peter M. Brost, Forester; Burl D. Twitchell, Carpenter Leader; and Dewey F. Erich, Maintenance Worker.

Visited Buckboard Campground lagoons and special use area, Lucerne Campground, Lucerne Contact Center, Lucerne Lagoons, and Manila Ranger Station.

Dutch John Unit of Flaming Gorge Ranger District - John C. Combs, District Ranger and Brian Barber, Maintenance Supervisor.

Visited Firehole Campground, Firehole Lagoons, Antelope Campground, Cedar Springs Special Use Area, Cedar Springs Sewage Treatment Plant, Cedar Springs Lagoons, Bootleg Campground, and Bootleg Lagoons.

Vernal Ranger District - Vaughn E. Francis, District Ranger and Floyd Evans, Maintenance Supervisor.

Visited Lodgepole Campground, Lodgepole Treatment Plant, and Lodgepole Lagoon Site.

Roosevelt Ranger District - David F. Keddy, District Ranger and G. Reay Jessen, Maintenance and Fire Prevention Technician.

Visited Moon Lake Campground, Moon Lake Treatment Plant, and Altonah Sewage Lagoons.

3. Fishlake National Forest - August 30-31:

Regional Office - Team members participating in the review on this Forest are as follows: Ron Hayden, Assistant Director of Engineering and Vern Mitchell, Water and Sanitation Engineer.

Supervisor's Office - Ralph C. Cisco, Forest Supervisor; Stephen M. Rushton, Recreation and Lands Branch Chief; Richard G. Harris, Forest Engineer; and Donald Marchant, Civil Engineer.

Loa Ranger District - Roderick R. Howard, District Ranger; Don L. Okerlund, Forester; and Ted Taylor, Forestry Aid (Maintenance).

Visited Fishlake Lagoons and vault waste dump station, Doctor Creek Campground, sewage lift stations, Lakeside Special Use Area, Fishlake Ranger Station Complex, Fishlake Lodge Special Use Area, Bowery Special Use Area, Doctor Creek Trailer Dump Area, and Doctor Creek Overflow Camp Area.

Fillmore Ranger District - Visited Fillmore Vault Waste Dump Station, Copley Cave Campground, and Shingle Mill Campground.

4. Dixie National Forest - September 1-3:

Regional Office - Team members and consultants participating in the review on this Forest are as follows: Ron Hayden, Assistant Director of Engineering; Vern Mitchell, Water and Sanitation Engineer; Dave Crigger, Programs Engineer; and Dave Karling, Recreation Administration Planner.

Supervisor's Office - Merlin J. Bishop, Forest Supervisor; Ralph S. Rawlinson, Branch Chief of Recreation and Lands; Jay C. Commander, Forest Engineer; and John D. Fehr, Sanitary Engineer.

Cedar City Ranger District - Rollo H. Brunson, District Ranger; LaMond Davis, District Recreation Specialist.

Visited Panguitch Lake Ranger Station, Panguitch Lake Lagoons, trailer dump station, vault waste dump station, and comminutor manhole, grinder pump lift stations, trailer dump station, Panguitch Lake Campground comfort stations, Duck Creek Lagoons, Duck Creek Vault Waste Dump Station, Duck Creek Ranger Station Complex, Duck Creek Campground, and possible future hookups at Movie Ranch.

5. Sawtooth National Forest - September 8-10:

Regional Office - Team members participating in the review on this Forest were as follows: Ron Hayden, Assistant Director of Engineering; Vern Mitchell, Water and Sanitation Engineer; Don Braegger, Administrative Services; and Bill Rozynek, Recreation Plans and Administration.

Supervisor's Office - Ed Fournier, Forest Supervisor; Robert F. Hoag, Recreation and Lands Staff Officer; Dow Bond, Forest Engineer; and Jim Leuze, Civil Engineer.

Sawtooth National Recreation Area - Gray Reynolds, Superintendant; Neil Hunsaker, Assistant Superintendant; and William W. James, Forestry Technician (Maintenance).

Visited the Stanley Ranger Station, Stanley Administrative Site, Stanley Warehouse, Redfish Lagoons, Redfish Vault Waste Dump Station, Lagoon Metering Manhole, Redfish Water System, chlorinator house, Redfish Sewage Lift Station, Point Campground dosing tank, Redfish Lodge Special Use Area, Little Redfish Campground, Galena Lagoons, Russian John Guard Station, and Sawtooth National Recreation Area Headquarters Building.

Fairfield Ranger District - Rex O'Neil, Range and Maintenance Technician.

Visited Big Smoky Lagoons, Big Smoky Guard Station, Big Smoky Fire Camp, Bounds Creek Campground, and Big Smoky Campground.

II. SUMMARY OF REVIEW

A. Objective of Review - The general objective of the review was to focus on the activities relating to the operation and maintenance of sewage treatment and disposal facilities in the Region to determine condition of the facilities and the adequacy of the operation and maintenance of them.

Specific objectives of the review were:

Determine the condition of existing facilities on representative Forests in the Region.

Determine the adequacy ~~of~~ or inadequacy of operation and maintenance plans and practices on representative Forests in the Region.

Identify weak points in the decisionmaking process (either in the early planning stage or during design and construction) which contributed to deficiencies.

Evaluate the adequacy of Regional Office direction and assistance in the operation and maintenance programs.

Assess obstacles to performance and management of O&M activities.

Identify and publicize new or different techniques, methods, or approaches.

Develop a proposal for financing needed repairs on a regional basis.

Develop an action plan to correct deficiencies to improve accomplishment and performance.

B. Description of Problems Identified and Causes - Problems identified during the course of this review are listed according to importance.

Existing and potential sanitation, health, and safety hazards are indicative of the problems we identified. The problems are:

1. Financing the cost of operation and regular maintenance of sanitary facilities. This problem is caused by the lack of sufficient funding to operate and maintain all facilities at a suitable level.

2. Financing the cost of repair and replacement of sanitary equipment or facilities. This problem is caused by the lack of funding to provide for the purchase of needed repairs or replacement parts.

3. Improper or inadequate design of sanitary equipment or facilities. This problem has been generated primarily by the lack of experience of the design personnel, along with time constraints of the Pollution Abatement Program and fiscal contracting requirements.

4. Inadequate direction from the Forest Supervisors and District Rangers. This problem has been caused by three main factors:

   a. Disregard of the problem.

   b. Ignorance that the problem exists or that it has any health or safety implications.

   c. Budgetary or other pressures cause the supervisor to direct action or work in other areas.

5. Violation of Forest Service regulations or direction.

6. Inadequate training of operators. This is a problem because few employees who are to operate and maintain sanitary facilities have received any formal training in this field. Those who have received specialized training have attended sessions oriented toward the operation and maintenance of municipal systems.

7. Lack of design or equipment standardization. This problem is demonstrated by the excessive number of different designs for similar installations (i.e. vault dump stations) and different pieces of equipment performing the same function.

8. Inadequate construction inspection. This has been a problem which requires additional expense and time to fix problems or change items to meet existing codes and regulations when they should have been completed during construction.

9. Lack of proper administration of special use permits. This is a case where conditions which are contrary to existing laws and regulations or permit clauses are allowed to continue.

10. Failure of equipment. This problem is caused by or increased by the lack of proper preventative maintenance or an adequate replacement program.

C. Alternatives Considered Feasible For Problem Solution

1. Alternatives for financing the cost of operation and regular maintenance and for financing the cost of repair and replacement of equipment or facilities.

a. Short-Range

(1) Continue as is with Districts accomplishing needed repairs and replacements as best they can.

(2) Regional Office earmark funds for major repair or replacement of sanitary facilities and keep them in the Regional Office. Projects would be funded by regional priority.

(3) Regional Office earmark funds for major repair or replacement of sanitary facilities and identify in the Forest allocations. Forests would finance projects from these funds by Forest priority.

(4) Regional Office would retain a reserve for emergency repairs. After September 1, this fund would be spent on projects for replacement by regional priorities.

(5) Forests would retain a reserve for emergency repairs. After September 1, this fund would be spent on projects for replacement by Forest priorities.

b. Long-Range

(1) Establish a regional sinking fund (working capital type fund) with operating funds coming from fees paid from regular appropriations.

(2) Establish a Forest sinking fund (working capital type fund) with operating funds coming from fees paid from regular appropriations.

(3) Regional Forester direct Forests to place costs for a predetermined standard of maintenance of sewage treatment and disposal facilities in Level 1 of the program budget process. Costs for additional heavy maintenance would be in increments.

(4) Investigate the feasibility of establishing a revolving fund similar to the Emergency Relief Fund administered by the Federal Highway Administration. It should be a no-year type appropriation with the amount expended annually, replaced by additional appropriations.

2. Alternatives For providing adequate design.

a. Regional Office develop standard designs, drawings, and specifications for sanitary facilities.

b. Regional Office present a designer-oriented training session for engineers actually involved in sanitation facility design.

c. Establish a sanitation design group in the Regional Office. This group would provide design and contract packages for the Forests (similar to Bridge Group).

d. Regional Office review the qualifications of people approved to do design work on sanitation facilities. Keep a current list of people recommended to the Regional Forester as being qualified to do sanitation design work. Do not allow unqualified people to design.

e. Have Regional Office Staff attend design sessions to keep them current with the state of the art in design of sanitation facilities.

f. Develop two design centers in the Region staffed with qualified designers to do all sanitation design work. (probably north and south zones).

g. Have Regional Office operation and maintenance engineer review sanitation designs and drawings for operation and maintenance considerations.

h. Have Regional Office design engineer visit sanitation project sites during construction phase.

3. Alternatives for providing adequate direction from Forest Supervisors and District Rangers.

a. Get Forest Supervisors and District Rangers involved in Technical Assistance Trips concerning sanitation facilities to make them aware of the problems.

b. Regional Office make a short presentation of the sanitation facilities operation and maintenance problems at a Forest Supervisors' meeting or at Regional Recreation Staff man meeting.

4. Alternative for correcting the violation of Forest Service regulations or direction.

a. When performing technical assistance trips, the Regional Office Construction and Maintenance Engineer should notify the Forest Supervisor and District Ranger of violations of regulations or direction which he observes.

5. Alternatives for providing adequate training of operators.

a. Regional Office develop and present a formal training session and workshops to prepare Forest maintenance personnel to do their jobs effectively.

b. Regional Office transmit material on operation and maintenance directly to sanitation facility operators for their information.

c. Regional Office develop an outline for operator training and provide training aids to interested facility operators for self-study.

d. Encourage facility operators to obtain State certification.

6. Alternatives for standardizing designs and equipment.

a. Prepare regional standard drawings and specifications for the more common items included in sanitation projects. Require Forest to use these drawings and specifications.

b. Standardize equipment to the extent possible under current procurement regulations.

7. Alternatives for providing adequate construction inspection.

a. Require that all Contracting Officer's Representatives and inspectors, except inspectors in training, on sanitation projects be certified for this work by examination.

b. Promote the detailing of certified Contracting Officer's Representatives and inspectors to specific projects on Forests without properly certified personnel.

III. Commendations

A. Crystal Springs Campground - Toiyabe N.F. It had three vault toilet buildings that were in excellent maintenance condition. They were clean and well maintained. A Campground Host had been assigned there all summer and had contributed to the good job. Also, the Carson District maintains their vault toilet buildings with a pressurized package pump and detergent tank carried in a Forest pickup. This is similar to the pressurized systems used at carwashes. The District flushes each of the buildings at least once a month and more often, as needed. They pump the vaults three times a year. The last commercial vault pumping contract was for $30 a toilet. More recently, they have utilized the Forest Service "honeywagon" from the Bridgeport District.

B. The Toiyabe National Forest has a 750-gallon vault waste pumping unit and they have scheduled it and manpower to work on at least three Ranger Districts. The Bridgeport District purchased the unit and pays for the FOR on the truck. They have coordinated with two other Ranger Districts to effectively use this unit.

C. The Ashley National Forest was the first Forest in the Region to have operation and maintenance plans.

D. Both Ashley National Forest sewage treatment plants are as well operated and maintained. This indicates interest and a desire to do a good job on the part of the plant operators.

E. The Forest and Districts responsible for the Lodgepole and Cedar Springs treatment plants should be commended for the additional work done at this site such as constructing hand-rails for safety and building a shelter over equipment.

F. With minor exceptions, the interest on the part of the people directly responsible for operation and maintenance of sanitary facilities results in good performance. (Ashley N.F.)

G. The Flaming Gorge District, Ashley National Forest, has used a soil sterilizer on the banks of the Bootleg lagoon which killed the weeds and yet did not bother the algae in the pond. The lagoon appears to be operating properly.

H. Doing a good job of maintaining lift stations at Fishlake, and there seems to be no problems.

I. The Fishlake operation and maintenance plans look good.

J. There is a high level of cooperation and coordination between the Cedar City District and the Supervisor's Office staff. Willingness of the Ranger calling the Supervisor's Office for help and willingness of the Supervisor's Office to respond was indicated (Dixie N.F.).

K. The Dixie National Forest had a good contract with the vault waste hauler.

L. The operation and maintenance plans for Panguitch Lake and Duck Creek have been prepared and are being revised as the Forest gains experience in the operational and maintenance problems of the various systems.

In addition, the Forest has devised a daily, weekly, and monthly checklist to be filled out by the system operator. This is an excellent tool to effectively accomplish the routine maintenance (Dixie N.F.).

M. The Redfish Lake and Big Smoky sewer systems and lagoons have been well maintained. This indicates that the Forest people have taken a personal interest in the systems and are doing a good job.

N. The Operation and Maintenance Plan for Redfish Lake is one of the best we have seen in the Region.

O. We also wish to commend the excellent job done by Rex O'Neil in being at the vault waste dump station when our contractor was dumping. We believe this is the main reason the dumping of vault wastes was properly performed.

P. The Forest people are interested in starting a preventative maintenance program. It is an excellent idea to work on methods of cleaning and flushing sewer lines periodically to eliminate possible line plugs.

IV. Statement of Findings and Analysis of Alternatives

A. Findings of the Review Team with regard to identified problems (by priority).

1. At the Bridgeport Ranger Station, Toiyabe National Forest, considerable time was spent looking at the overcrowded site and the inadequate sewer system. The station is served by a Bio-Pure package sewage plant. This facility is about five years old. It was designed for about one-half of the present load it is receiving. District consolidations have almost doubled the number of personnel assigned at the Ranger Station.

   The sewage plant is out of operation a total of about four weeks each year. When it is not operating, the raw sewage automatically overflows into a seepage pit in the meadow adjacent to the plant. The watertable is not more than 24 inches underground at any time. This is a design problem. On other occasions, the plant operates but does not fully treat the effluent and the raw or semi-raw effluent is pumped to the drainfield across the highway. This operation violates discharge regulations. There is some speculation that this drainfield could contribute to pollution of a private well located at a residence at least 1,000 feet from the end of it. No test holes or testing has been done to substantiate or disprove the allegation.

   The operation and maintenance of this facility has substantially impacted the budget. The annual cost of operating this sewage facility at the Ranger Station is estimated to be about $1,300 per year. The repair costs at times have been as high as $3,000 per year.

   There are no test results on record to indicate the degree of treatment by the existing plant even when it is operating properly.

   At this site, there is inadequate operation of a complicated mechanical sewage plant with untrained employees who have prime responsibilities and occupations in other areas. When breakdowns occur, the plant was returned to operation "by guess and by golly." No operating instructions were on the District.

2. Buckboard and Lucerne - Ashley National Forest. These sewage facilities are reaching an age and condition where mechanical equipment will need to be replaced. There is no standardization of parts or equipment. The lagoons at these two sites did not have enough water in them to operate properly. The lack of water could be caused by one or a combination of three things--more evaporation than had been planned for in design, more infiltration into the soil from the lagoon, or less water entering the lagoon from the sewage system. These all show evidence of planning and design problems.

   The estimated costs for normal operation and maintenance of the water and sewage treating systems amounts to $15,000 per year or about 3/5 of the total cost of operation and maintenance at Lucerne Campground.

   The sewer system at Buckboard Campground is the most expensive to operate on Flaming Gorge. Part of the high costs can be attributed to excessive equipment breakdowns and system failures. The system contains three pneumatic ejector lift stations. The upper lift station is frequently overloaded during peak use times when the two contributing lift stations are continuously pumping into it.

3. Fishlake. One grinder pump motor at Doctor Creek Overflow Campground overheated and burned up.

   The lagoon is full and is being pumped down. Organic loading looks okay and is well below capacity. Hydraulic loading is excessive and the Forest is working on checking the system to determine the reason for excess water. At this time, the lagoon cannot accept any more vault dumpings because of hydraulic loading.

4. The Cedar Springs Lagoon, Ashley National Forest, has a long irregular shape. There are dead spots or areas in the lagoon where proper treatment is not taking place. Only one lagoon cell of the four constructed is being used. only two

   There is a shortage of water at this site and the water level in the lagoon is too low for proper operation.

   Operation and maintenance costs for this site were estimated at $6,925 in the operation and maintenance plan. The operator of the facility estimates that he has only been able to do about one-half the job as described in the plan, because of the lack of financing. This is the bare minimum needed to keep the facility operating and the cost is about $3,500 per year.

The sewage from the marina fish cleaning station and adjacent restroom is first run through a package treatment plant at the marina, then pumped to the lagoon. The Forest was unable to explain the reasons for continuing the operation of the treatment plant.

5. The process to obtain power through GSA causes problems. Two cases were noted. The one at Firehole was three years in the process. Power obtained for Redfish Lake took 16 to 18 months to process through GSA. As a result, the contract for construction of the sewer lines was completed and seeded before the trenches for the underground power were dug. This procedure caused the ground in the area to be disturbed and reseeded twice.

6. Some lagoons are in poor condition due to weeds and rodent problems. Some specific examples are:

   a. The lagoon banks at Cedar Springs on the Ashley National Forest.

   b. The weed and tree growth on the bottom of the second cell and on banks of both cells at the Galena Overlook Lagoon on the Sawtooth National Forest.

   c. Some weeds at the Big Smoky Lagoon on the Sawtooth National Forest.

   d. Some weeds in the cell to be lined at Lucerne Lagoons on the Ashley National Forest.

7. Big Smoky. Excessive water from spring runoff had to be siphoned off to a sagebrush flat. Operation and maintenance plans for Big Smoky are not completed.

8. Redfish Lake. There was an electrical control failure for the grinder pump. This is a German-built relay for the pump, Midland brand. The relay failed and had to be ordered from Germany.

   There are no signs on the roads to show there is a trailer dump station at Redfish Lake or at the Stanley Office. There are no signs telling how to use the trailer dump station or distinguishing potable from nonpotable water.

   The dosing chamber at the Point Campground had malfunctioned. The bell on the siphon overflow had not seated properly. This allowed a continuous flow of water into the system.

9. A common problem throughout the Region is the use and maintenance of vault waste dumps. Part of the problem is a failure in design and part is a failure in proper hauling contract preparation and administration.

There is inadequate experience on the part of Forest designers and Regional Office reviewers in the use of waste dumps. This inexperience can cause expensive design errors and may result in building facilities which cannot be used.

Some Forests have had difficulties in getting proper cleanup from haulers after using some of our vault waste dump stations. Others, using similar facilities, have been obtaining good results through use of stricter contracts and adequate administration.

Specific examples of dump station problems are:

a. The bar screen on the Fishlake dump station (Fishlake National Forest) is at approximate ground level and is too small. Waste being dumped almost immediately overflows and cleanup is difficult.

b. The Fillmore dump station (Fishlake National Forest) is not built according to approved plans--especially in emergency bypass and unit elevations. The emergency bypass inlet is above the level of the floor and causes cleanup problems. Bar spacing in the bar screen is too wide and allows bottles, cans, and other debris to pass through.

The waste dump ramp at Cedar Springs Lagoon (Ashley National Forest) has not been properly maintained. Debris is at the base of the ramp and the lagoon is becoming an open dump. This situation exists in varying degrees at other lagoons equipped with dump ramps. Cleanup at ramps used by contract haulers appear to be better than at ramps used by our own people.

10. Three boat sanitation stations are being used on Flaming Gorge. Their storage or holding tank has a capacity of 500-550 gallons, and it is too small. These units have to be pumped out about every three days during peak use periods and about every ten days during other periods.

The tanks and entire unit were GSA units and the tanks were too weak and failed. Modifications had to be made at additional expense to the Forest.

11. Operation and maintenance plans are well written and adequate for the manager. However, they describe the ultimate and actual operation and maintenance activities are less than this because of resource constraints. The plans are not made available to the facility operators. There were no simple instructions in the operation and maintenance plans or at the sites for the guidance of those who may be asked to help operate a system (Ashley National Forest).

12. People who are responsible for operating and maintaining these facilities have received no special training. They do not understand the process taking place and are not properly prepared to do a good job of operating and maintaining them (Dixie National Forest).

13. Galena - Overlook Lagoons. Water was about one-half the depth needed for proper operation. Floating algae mats and sludge deposits were on the surface of the first cell. The extra water supply, which could have been used to fill the lagoons, was being wasted because the operator did not understand the basic requirements of lagoon operation.

    There was no fence or warning sign around the lagoon.

14. Panguitch Lake. The manufacturer of the grinder pump stations supplied ball type check valves, as specified. They have proven to be a problem because stringy material clogs them and keeps them from closing properly. The Forest has replaced these with flapper type check valves.

    The trailer dump station did not have the vacuum breakers on the culinary water faucets. The contract drawings and specifications clearly required this item, yet we did not get them as part of the contract. Contract administration appears to be the problem.

    There are no signs to direct people to the trailer dump station or to let them know a dump station is available.

    The comminutor near the lagoons was open on top and set in a sump without a drain. Excessive head in the supply line to the comminutor causes sewage to come out of the top of it and spill over into the sump. The sump is difficult to clean out. These are design or equipment specification problems.

15. The Firehole Campground and Boaters' comfort station, Ashley National Forest, were not open for use during the review. Some corrosion of electrical controls for the sewage lift station has occurred and a switch must be replaced before the sewage pumps will operate. Operation and maintenance costs require approximately $10,000 plus a usage rate per year to provide electricity to this site.

The lagoons at the site had received, as of August 24, about 290,000 gallons of water, but only about 80,000 gallons had been retained. It appears that there is excessive infiltration into the soil from the lagoon.

16. There are five floating comfort station units which are not being used and are stored in our parking lots.

    The Forest priorities for the use of funds prevented use of these units. Sufficient funding was not available to operate and maintain these units in addition to all of the other facilities at Flaming Gorge.

17. In the past, there was generally no involvement of operation and maintenance personnel in the planning and design process. These circumstances lead to the design and construction of systems and facilities that were difficult and expensive to maintain.

    Each individual involved in the decisionmaking process and design has been allowed, or required by circumstance, to operate independently of others who were also involved. This caused problems because all desired goals could not be met (Ashley National Forest - Firehole).

18. Electrical inspection during construction is a universal problem on all Forests visited.

19. Electrical controls and apparatus were not enclosed in one box, but were placed in two, three, or four boxes at each pump lift station or equipment station (Dixie National Forest). Electrical boxes and switches had different keys so a person had to be sure to have the right key to gain access to equipment for operation and maintenance.

20. The short sections of pipe used to regulate the elevations between lagoon cells do not work properly. They leak at the base and between sections. This is a design problem which appears to be common to installations throughout the Region.

21. The Leavitt Meadows Lodge, under special use permit on California Highway 108 at Sonora Pass, was visited. The Forest Engineer indicates that the sewage system is not acceptable. We concurred from cursory observation that the whole facility is a mess. Sewage and sanitation has not received the proper attention in regard to permit administration by the Forest.

22. The problem at the Buckeye Campground Lagoon, Toiyabe National Forest, was that the operating cell rubber liner had "bubbled up" above the lagoon fluid level, apparently as a result of gas from deteriorated sewage placed in the lagoon prior to the liner installation. No other operation and maintenance problems were evident at the Buckeye Lagoon.

B. Analysis of Alternatives

1. For financing the cost of operation and regular maintenance and for financing the cost of repair and replacement of equipment or facilities.

The following discussion speaks to the immediate problem with this Activity Review. However, it should be recognized that this is just the "tip of the iceberg." There are many more operation and maintenance (O&M) activities related to the "physical plant" of the Forest Service that are very much like the situation we are reviewing.

The basic situation found by the review team is that for the past several years, O&M funding has permitted only "crisis management" as far as sewage treatment and disposal facilities are concerned. Crisis management has kept the facilities operating by fixing or replacing components, but little or no preventive maintenance nor spare parts ordering has been accomplished.

Proposals for funding needed repairs has been viewed in two ways. One is what the Region could do within its capabilities and authorities. Second, is what could be done, but would require Washington Office or Congressional action. Within these ways, short-range and long-range alternatives are considered.

a. Region Within Its Capabilities and Authorities

(1) Short-Range

(a) Continue as is with Districts accomplishing needed repairs and replacements as best they can.

Advantage - Avoids further dilution or stretching of already scarce funds.

Disadvantage - Does not solve the problem and facilities will continue to deteriorate to eventual total loss.

(b) From each years' allocation, the Regional Office could earmark funds for major repair or replacements. The funds would be held in the Regional Office to finance projects by Regional priority.

Advantage - Provides some response to the situation and has flexibility in shifting from Forest to Forest without having to recoup funds from Forests once they are allocated.

Disadvantage - Dilutes already scarce funds and promotes "squeaking wheel" philosophy. Regional priorities may be difficult to establish.

(c) From each years' allocation, the Regional Office could earmark funds for major repair or replacements. The funds would be identified in Forest allocations (and they in turn in District allocations as appropriate). Only general criteria would be established by the Regional Office, and the Forest would set their own priorities.

Advantage - Provides some response to the situation and lets those more familiar with the needs determine project priorities.

Disadvantage - Dilutes already scarce funds and reduces or eliminates flexibility to react to Forest problems that are determined to be of regional significance.

(d) From each years' allocation, the Regional Office hold a reserve for emergency repairs. After September 1, any unused funds would be spent on projects for replacement or spare parts by Regional Office priorities.

Advantage - Provides at least some response to the situation, has flexibility in shifting from Forest to Forest without having to recoup funds from Forests once they are allocated, and the amount of the reserve should be less than if Forests do individually.

Disadvantage - Still some dilution of already scarce funds and promotes "squeaking wheel" philosophy.

(e) From each years' allocation, the Forests hold a reserve for emergency repairs. After September 1, any unused funds would be spent on projects for replacement or spare parts by Forest priorities.

Advantage - Provides at least some response to the situation and lets those more familiar with the needs determine project priorities.

Disadvantage - Still some dilution of already scarce funds and reduces or eliminates flexibility to react to Forest problems that are determined to be of regional significance. Total amount of reserves would probably be higher than if the Regional Office did itself, and "major" emergencies may still not be able to be handled by an individual Forest.

(2) Long-Range

(a) Establish a regional sinking fund (working capital type fund) with operating funds coming from fees paid from regular appropriations.

Advantage - Funds become no-year funds and are not "lost" if not obligated. Total amount of fund should be less than if Forests had own sinking fund, and response to "major" expenditures would be easier to handle.

Disadvantage - Dilutes already scarce funds. Major expenditures may be difficult to handle at first, unless the sinking fund was initially underwritten. This underwriting would have to come from existing appropriations. There is a loss of identity of dollars from a Forest viewpoint.

(b) Establish Forest sinking funds (working capital type fund) with operating funds coming from fees paid from regular appropriations.

Advantage - Funds become no-year funds and are not "lost" if not obligated. Forests have sense of identity in that the fees they pay stay on the Forest.

Disadvantage - Dilutes already scarce funds. Total amount of funds would probably be higher than if a regional fund were established, but response to "major" expenditures may not be able to be handled by an individual Forest. Forest sinking funds would also require initial underwriting by existing appropriations.

(c) Regional Forester direct each Forest to place the costs for a predetermined standard of maintenance of sewage treatment and disposal facilities in Level 1 of the program budget process. Costs for additional heavy maintenance and replacement would be in the increments.

Advantage - Because we usually get Level 1 funding, the odds are great that funds would be available.

Disadvantage - Funds for these types of items are not visible in either the budget process nor the allocation process. The demands on Level 1 funding is so great that including these type costs will only push other essentials into increments. In many cases, these essentials will be of the type that we really cannot do away with in a timely manner. This will result in having to use maintenance funds to cover the cost of at least some portion of the essentials.

b. Requires Washington Office or Congressional Action

(1) Short-Range - None specifically identified. However, some of the alternatives available to the Regional Office could be done by the Washington Office if the solution were to be on a service-wide basis.

(2) Long-Range - Investigate the feasibility of establishing a revolving fund similar to the Emergency Relief Fund administered by the Federal Highway Administration. It would finance repair of sanitation systems failures which cannot be funded from regular appropriations. It should be a no-year type appropriation with the amount expended annually, replaced by additional appropriations.

Advantage - Provides a continuous source funds that do not "have" to be obligated or be lost with the ending of a fiscal year. Funds are not a part of Regions' or Forests' program budgets or initial allocations, therefore, they are not viewed as a dilution of already scarce funds. There is maximum flexibility in that all units would have access to the funds. Handled on a service-wide basis, "major" expenditures should be no problem.

Disadvantage - Funds managed on a service-wide basis usually involve time delays and significant red tape procedures. Even though not viewed as a dilution of funds, in reality, the revolving fund would be a part of the total Forest Service appropriations, and would not generate additional funds for the Forest Service.

In making this Activity Review, all discussions evolved into a recognition that the problems concerning sewage treatment and disposal facilities are only the "tip of the iceberg." The situation becomes mind-bogling when one tries to comprehend the magnitude of the problems and possible solutions. The entire "physical plant" of the Forest Service could be viewed as we have done here. The same proposals for funding could also be made, but the amounts of funds would just increase.

Assuming we will have to work within existing modes of program budgeting, line item funding, and philosophies, one comes to the point of trying to devise a solution that is highly visible and shocking. To this end, the following two proposals are presented:

(a) Follow the Resources Planning Act principles. Describe what can be done (to acceptable, but high standards) at various budget levels and then follow the plan according to funds received. This would permit quality operations in those being done, but would probably result in reduced or no services at facilities. This reduced or no-service will cause increased deterioration of facilities and resource damage, additional vandalism, and a host of other negative results.

(b) Recognize that National Recreation Areas are "different" than the regular Forest Service recreation program. Separate and identify the cost to properly operate National Recreation Areas and make this an increment (one for FGNRA and one for SNRA), and include the regular recreation program in Level 1. The reverse of this could also be done.

2. For providing adequate design.

a. Regional Office develop standard designs, drawings, and specifications for sanitary facilities.

Advantage - All Forests would use same or similar designs, drawings, and specifications. This would reduce time spent in preparing contract packages and arriving at suitable solutions to design problems. Design problems or inadequacies would be corrected sooner.

Disadvantage - Forest designers would have less design freedom. We might lose the advantage of a fresh approach to design problems. Standard designs will not work in all situations.

b. Regional Office present a designer-oriented training session for Engineers actually involved in sanitation facility design.

Advantage - Would upgrade designer's abilities and keep current with recommended practices. Would provide continuity between Forests and help in Regional Office review process. Would help avoid common mistakes and design errors often made by designers. Would bring designers up to date on regional direction.

Disadvantage - Would tend to stereotype design. Would be limited to those who would do design and thus limit exposure of other engineers to the program. Would take time and money from other jobs.

c. Establish a sanitation design group in the Regional Office.

Advantage - All designs would be done by one group, which would be able to stay up to date in the sanitation design field. There would be more uniformity throughout the Region. Would minimize numbers of designers needed.

Disadvantage - This is not in keeping with placing the doing and project work at the Forest level. Requires more ceilings in Regional Office. Makes designer too remote from field and actual on-the-ground conditions.

d. Regional Office keep a current list of people recommended to do design work.

Advantage - Follows program direction. Keeps control on designers and designs. Gives some assurance that designs will be properly prepared. Notifies Forests of skills, deficiencies, and training needs.

Disadvantage - Limits people allowed to do design.

e. Have Regional Office Staff attend design sessions.

Advantage - Helps keep Regional Office Staff up to date by review of design principles and interchange of ideas with other designers.

Disadvantage - Takes time from other tasks. Costs travel and per diem.

f. Develop two design centers in Region.

Advantage - Would reduce number of designers needed in the Region. Would provide some uniformity within the design center area of service.

Disadvantage - Removes the doing job from the Forest. Would require additional ceilings, space, supplies, and equipment. Creates an organization level that does not fit in and causes supervisory and administrative problems.

✓ g. Have Regional Office Operation and Maintenance Engineer review designs.

Advantage - Provides for consideration of possible operation and maintenance problems. Could eliminate the construction of inoperable or hard to maintain facilities.

Disadvantage - Increases review time.

✓ h. Have Regional Office Design Engineer visit project sites during construction.

Advantage - Provides training and experience in what construction machinery can and cannot do. Points out design problems.

Disadvantage - Takes time from other preliminary engineering tasks.

3. For providing adequate direction from Forest Supervisors and District Rangers.

a. Get Forest Supervisors and District Rangers involved in technical assistance trips to make them aware of problems.

Advantage - Would point out program problems. Speed reports might do this job.

Disadvantage - Takes time of line officers. There may be a tendency to over do and get them involved in too many minor problems.

b. Regional Office makes presentation at Forest Supervisors or Recreation meeting.

Advantage - Reaches the greatest number with least impact on their time. Provides a uniform approach and helps provide uniformity throughout the Region. Minimizes time and cost to those making the presentation.

Disadvantage - Reduces one to one interchange of thought and ideas between participants. Reduces the opportunity to speak about individual project problems.

4. For Correcting the violation of Forest Service regulations or directions.

a. Notify Forest Supervisors or District Ranger of observed violations of regulations or direction.

Advantage - Brings violations to line officer's attention. Provides an opportunity to solve problems without waiting for formal notification.

Disadvantage - In certain cases, this may develop an attitude of hiding problem areas.

5. For Providing adequate training of operators.

a. Regional Office present formal training session and workshops.

Advantage - Will provide trained operators. Gets operator's job and its importance recognized. Gets operators more closely involved in the job.

Disadvantage - Takes time and money for students and instructors.

b. Regional Office transmit material on operation and maintenance directly to operators.

Advantage - Makes sure the person needing the information gets it. Helps keep operators up to date. Helps recognize the importance of the operator's job.

Disadvantage - Bypasses the regular organization. Engineers and others may not be aware of information operators are receiving.

___ c. Regional Office develop training outline and provide self-study training aids.

Advantage - Can provide some immediate training without waiting for a formal session. Reduces cost of training (travel and per diem).

Disadvantage - Operators may not take advantage of a self-study training opportunity. There is very little feedback to instructors. Takes time and money to prepare and distribute training materials.

d. Encourage operators to obtain State Certification.

Advantage - Provides some training and recognition to the operator. (Though not all of the states may have certification programs) This would fulfill some EPA requirements if we are ever reviewed by EPA.

Disadvantage - Some work supervisors view this alternative as the start of an unnecessary certification program which would restrict management prerogatives in hiring and job placement.

6. For standardizing designs and equipment.

a. Prepare regional standard drawings and specifications for common items and require Forests to use them.

Advantage - Provides for some standardization in Region. Can help by using same equipment as, "or equal" base on all jobs.

Disadvantage - Standards will not fit in all projects. Reduces original thinking by Forest designers, and we could miss a better solution now and then.

b. Standardize equipment to the extent possible under current procurement regulations.

Advantage - Provides for opportunity to trade spares between installations during emergencies. Reduces number of spare parts to be carried in stock. Provides better opportunity for operators to become proficient in operation, maintenance, and operation of standardized equipment.

Disadvantage - Hard to justify certain items by make or trade name. May get in a rut and overlook better equipment.

7. For providing adequate construction inspection.

a. Require certified Contracting Officer's Representative's and construction inspectors on projects.

Advantage - Provides trained people on the job. Agrees with Forest Service certification program direction.

Disadvantage - May create a personnel or training problem for Forests that have sanitation projects, but have no certified Contracting Officer's Representatives or inspectors.

b. Promote the detailing of certified Contracting Officer's Representatives and inspectors to specific projects on Forests without certified personnel.

Advantage - Would provide certified personnel where needed. Reduces the need to train as many Contracting Officer's Representatives and inspectors in this field.

Disadvantage - Costs additional travel and per diem. Could create manning problems on Forests involved in details. Less commitment to job by person being detailed. Less opportunity for Engineers to gain experience in this field.